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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,856	05/30/2001	Koji Hattori	P/1071-1358	9007

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EXAMINER	
LOPEZ, CARLOS N	

ART UNIT	PAPER NUMBER
1731	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/867,856	HATTORI ET AL.	
	Examiner	Art Unit	
	Carlos Lopez	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/14/04 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1) Claims 1-3 are rejected under 35 U.S.C. 103(a) as obvious over Kodas et al (US 6,360,562). Kodas discloses using a spray-thermal decomposition method for producing hollow and non-hollow glass powders (Col. 31, lines 10ff). Kodas provides a liquid feed line 102 to aerosol generator 106 wherein the liquid is turned into aerosol 108. The aerosol is then fed to a furnace 110 where glass particles 112 are produced (Col. 5, lines19-27). The liquid feed line 102 includes multiple precursors materials which may be present in a single phase or alternatively one precursor could be in a solid state

(colloidal silica) and a second precursor in a liquid phase (a metal salt) (Col. 6, lines1-13). As shown in col. 26, lines 35ff, the liquid feed line 102 comprises metal precursors (deemed as the claimed water-soluble compound) such as nitrates, acetates and chlorides of a metal, which are highly soluble. In Col. 30, lines31ff, the liquid solution comprises a raw material oxide powder (SiO2) and a precursor for the intermediate oxides (Al2O3). Thus the liquid feed line comprises a mixed solution having the claimed raw material oxide powder (SiO2), water-soluble compound (nitrates, acetates and chlorides), and a different glass forming element (Al2O3) all mixed into a solution and thus resulting in applicant instant claim 1 mixed solution.

The resulting glass particles 112 range in size from 0.05μm up to about 20μm (Col. 30, lines 37-52). Raw material oxide powder range has varying sizes from 1μm, smaller than 0.5μm, smaller than about 0.3μm, or smaller than about 0.1μm (Col. 5, lines 40-43). Thus showing that Kodas raw material powder is either not more than 1/5 of the average particle size of the resultant glass powder as instantly claimed or is more than about 1/25 of the average particle size of the resultant glass powder as instantly claimed. The aluminosilicate glass composition of Kodas has a melting point in the range of 700 to 950 degrees Celsius as evidenced by Yoshikawa et al (Machine Translation). Kodas spray thermal decomposition temperature is in the range of 300 to 1500 degrees Celsius (Col. 27, lines 49) thus showing that Kodas thermal decomposition temperatures meets Applicant's claimed treatment temperature.

As shown in Tables I and II, the formed glass has a raw material oxide powder (SiO2) concentration of 8 –26% by weight or 54-55% by weight falling in both of

applicant's claimed raw material oxide powder concentration. Since the glass powder is formed from drops of the Kodas mixed solution, it would thus be obvious to a person of ordinary skill in the art that the concentration of Kodas solution has a concentration of less than and or optionally greater than 45% by weight as claimed by applicant.

It is also noted that Kodas does not explicit disclose that the liquid is aqueous it is understood in the art that if a solution includes water soluble compounds in its dissolved form, the solvent used, absent any indication, would be water. Applicant is also referred to Rosencwaig, which notes in the abstract that the liquid, which is sprayed-thermally to obtain glass powder is an aqueous solution.

2) Claims 4-13 are rejected under 35 U.S.C. 103(a) as obvious over Kodas et al (US 6,360,562). As noted above Kodas discloses a spray thermal decomposition method for making glass powder. Claims 4 further recite the concentration of the raw material oxide powder and solutes in the mixed solution. It is noted that Kodas teaches that the concentration of the solutes is a result effective variable affecting the size of the resultant produced glass powder (Col. 27, lines6-9). Thus it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have conducted routine experiments to determine the effective concentration that would yield the desired glass powder particle size.

Claims 6-13 recited various combinations either further limiting the particles size or changing the concentration of the raw material oxide powder in relation to the water-soluble compound. As noted above the concentration of the raw material oxide

powders depend on the desired glass powder size. In the same manner Kodas teaches that the raw material oxide powder's size depends on the particular application of the glass powder (Col. 30, lines 39-41). Thus showing that the raw material oxide powder is a result effective variable, which through routine experimentation its concentration is selected based on the application of the glass powder being sought.

3) Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodas et al (US 6,360,562) in view of Rosencwaig et al (US 4257799).

If applicant considers that Kodas' glass composition is different from the glass composition of Yoshikawa et al which was used to show that Kodas treats the glass raw material oxide above the melting point of the glass powder melting point, a rejection of the claims based on said interpretation follows.

As noted above Kodas discloses a spray thermal decomposition method for making glass powder. Kodas is silent treating the glass raw material oxide above the melting point of the glass powder melting point. Rosencwaig discloses a vertical drop oven for making glass powders using the thermal decomposition method (Abstract and Col 4 lines 3-22). Rosencwaig et al teaches that thermal decomposition of a solution in a multi stage oven wherein the temperature of a stage is higher than the preceding stage results in high quality micro sphere glass powders (Col. 2, lines 55ff). The stage having the higher temperature treats the glass powder precursor solution at temperature above 200 degrees Celsius of the melting point of the glass composition precursor solution. Thus at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have thermally decomposed Kodas solution with

Rosencwaig multistage oven (wherein the solution is treated at a temperature above 200 degrees Celsius of the melting point of the glass composition) to thus produce high quality micro sphere glass powders.

It is noted that Kodas does not explicit disclose that the liquid is aqueous it is understood in the art that if a solution includes water soluble compounds in its dissolved form, the solvent used, absent any indication, would be water. Applicant is also referred to Rosencwaig, which notes in the abstract that the liquid which is sprayed-thermally to obtain glass powder is an aqueous solution.

As for claim 4, Kodas teaches that the concentration of the solutes is a result effective variable affecting the size of the resultant produced glass powder (Col. 27, lines6-9). Thus it would have been obvious to a person of ordinary skill in the art to conduct routine experiments to determine the effective concentration that would yield the desired glass powder particle size.

Claims 6-13 recited various combinations either further limiting the particles size or changing the concentration of the raw material oxide powder. As noted above the concentration of the raw material oxide powders depend on the desired glass powder size. This shows that the raw material oxide powder is a result effective variable, which through routine experimentation is selected based on the application of the glass powder, is being sought.

Response to Arguments

Applicant's arguments filed 7/14/04 have been fully considered but they are not persuasive. Applicant argues that the Kodas reference does not disclose an aqueous medium. As noted in the body of the rejection "As shown in col. 26, lines 35ff, the liquid feed line 102 comprises metal precursors (deemed as the claimed water-soluble compound) such as nitrates, acetates and chlorides of a metal, which are highly soluble. In Col. 30, lines3lff, the liquid solution comprises a raw material oxide powder (SiO2) and a precursor for the intermediate oxides (Al2O3). Thus the liquid feed line comprises a mixed solution having the claimed raw material oxide powder (SiO2), water-soluble compound (nitrates, acetates and Applicants arguments are based on limitations not recited in the claims." While Kodas does not explicit disclose that the liquid is aqueous it is understood in the art that if a solution includes water soluble compounds in its dissolved form, the solvent used, absent any indication, would be water. Applicant is also referred to Rosencwaig, which notes in the abstract that the liquid which is sprayed-thermally to obtain glass powder is an aqueous solution.

Applicant also argues that the ratio of particle size range of the raw material oxide to the size of the glass powder is an extremely large number and that there is nothing in Kodas that would suggest a raw material oxide powder not more than 1/5 of the average particle size of the glass powder. Said argument does not negate the fact that Kodas disclose and envisages the claimed ratio. Nor has applicant provided any unexpected results concerning the 1/5 ratio.

In response to applicant's argument that the reference fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., pyrolysis temperature should vary depending on the relative amount of raw material oxide powder based on the total of the powder and the amount of water soluble

compound in a aqueous solution) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is noted that the instant claims do not recite that the pyrolysis temperature is a function of raw material amount and amount of water soluble compound. The claims only recite different scenarios wherein the pyrolysis temperature is changed based raw material amount and amount of water soluble compound for which Kodas reads on to at least one of those scenarios. The claims do not recite a step of determining the pyrolysis temperature based on raw material and amount of water soluble compound as argued. Again it is emphasized that the instant claims only recited different scenarios wherein the pyrolysis/decomposition temperature is varied based on the selected raw material amount and amount of water soluble compound. Hence there is no "determining step" limitation as argued.

In regards to the argument that Kodas does not show the significance of 45% and 1/25, it is noted that it is not required to show the significance of 45% and 1/25. If there is a requirement for showing the significance of 45% or 1/25, it is asked what is the required significance to be shown? Kodas provides different raw particle sizes being treated above the claimed thermal decomposition temperature and thus meeting the claimed scenarios.

Applicant also argues that Kodas teaches away from claims 8,9,12 and 15 because the feed line only discloses a 15% raw material oxide powder. It is noted that Kodas specifically discloses that the concentration of the solutes in the solution would

depend on the desired size of the glass powder. Hence showing that if a bigger glass powder is desired, a higher concentration of solutes, such as those recited in claims 8, 9,12 and15, would be required. Thus while Kodas give examples using 15% it does not constitute a teaching away.

The argument that Kodas neither Rosencwaig teach that the temperature of the pyrolysis should be a function of the amount and size of raw material oxide powder is found unpersuasive since the argued limitation is not claimed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference A in PTO-892 has been cited to show the state of the art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carlos Lopez whose telephone number is 571.272.1193. The examiner can normally be reached on Mon.-Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571.272.1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CL

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